ABSTRACT

Disclosed are a zinc oxide resistor structure, and methods of forming a glass layer and a resistor, which are required for producing the resistor structure. The zinc oxide resistor comprises zinc oxide grains and an oxide glass layer which contains bismuth and boron and intervenes between the zinc oxide grains. The oxide glass layer residing between the zinc oxide grains changes the electric properties between the grains to achieve a higher resistance and a non-ohmic characteristic of a voltage-dependent resistance value in the resistor. This non-ohmic characteristic can be applied, particularly, to a non-ohmic device to be compatible with a low-voltage operation. Differently from conventional resistors, the oxide glass layer intervening between the zinc oxide grains can achieve an enhanced mechanical strength of a junction in the device.